

## CLAIMS

What is claimed is:

1. A battery charger comprising:

a supply voltage unit providing a power supply voltage;

a constant current generator receiving the power supply voltage and outputting a substantially constant current, the substantially constant current being adapted for application to a battery; and

a timer coupled to the power supply voltage, the timer responsive to the power supply voltage and outputting a timer output to an input of the constant current generator;

wherein the constant current generator changes a magnitude of the power supply voltage in response to the timer output so that the substantially constant current is changed from a first current level to a second current level.

2. The battery charger of claim 1, wherein the timer outputs the timer output following a substantially fixed time delay after a transition of the power supply voltage above a substantially fixed threshold voltage.

3. The battery charger of claim 1, wherein the constant current generator reduces the magnitude of the power supply voltage in response to the timer output, and the first current level is higher than the second current level.

4. The battery charger of claim 1, wherein the constant current generator comprises:

a resistance element having a first terminal coupled to the supply voltage unit and a second terminal coupled to the battery; and

a current detector coupled to the resistance element for detecting the substantially constant current and outputting a current detector output, wherein an output of the current detector is supplied to the supply voltage unit.

5. The battery charger of claim 4, wherein the supply voltage unit is adapted to being coupled to an AC input, the supply voltage unit converting the AC input to a DC output that is the power supply voltage.

6. The battery charger of claim 5, wherein the supply voltage unit comprises a pulse width modulation (PWM) controller, the PWM controller being responsive to a change in the current detector output to adjust the power supply voltage so that the substantially constant current is maintained near a constant value.

7. The battery charger of claim 4, wherein the current detector comprises a transistor having first and second main terminals coupled across the supply voltage unit, and wherein the resistance element is coupled between a control terminal and the first main terminal of the transistor.

8. The battery charger of claim 7, wherein the current detector further comprises:  
a second resistance element coupled between the control terminal and the first main terminal of the transistor; and

a resistance reduction device for reducing a resistance between terminals of the second resistance element in response to the timer output.

9. A method of charging a battery comprising:  
supplying a power supply voltage;  
outputting a substantially constant current in response to the power supply voltage, the substantially constant current being applied to the battery;  
providing a timer output in response to a transition in the power supply voltage; and  
changing a magnitude of the power supply voltage in response to the timer output so that the substantially constant current is changed from a first current level to a second current level.

10. The method of claim 9, wherein the step of providing a timer output comprises the step of generating a timer output after a substantially fixed time delay following a transition of the power supply voltage above a substantially fixed threshold.

11. The method of claim 9, further comprising reducing the magnitude of the power supply voltage in response to the timer output, wherein the first current level is higher than the second current level.

12. The method of claim 9, further comprising:

detecting the substantially constant current and outputting a corresponding detector output; and

using the current detector output to control the power supply voltage.

13. The method of claim 12, wherein the step of supplying a power supply voltage comprises the step of converting an AC input to a DC output, the DC output being the power supply voltage.

14. The method of claim 13, wherein the step of converting an AC input to a DC output comprises the steps of:

converting the AC input supply to the DC output using pulse width modulation (PWM) techniques; and

adjusting the DC output in response to the current detector output so that the substantially constant current is maintained near a constant value.

15. A battery charger comprising:

means for supplying a power supply voltage;

means for outputting a substantially constant current in response to the power supply voltage, the substantially constant current being applied to a battery; and

means for outputting a timer output after a substantially fixed time delay from a time that the power supply voltage exceeds a substantially fixed threshold voltage, wherein the means for outputting a substantially constant current changes the substantially constant current from a first current level to a second current level in response to the timer output.

16. The battery charger of claim 15, wherein the first current level is higher than the second current level.

17. The battery charger of claim 15, wherein the means for outputting a substantially constant current comprises:

means for detecting the substantially constant current and outputting a current detector output, wherein the current detector output changes in response to a fluctuation of the substantially constant current from a constant value, and wherein the means for supplying is responsive to the current detector output.

18. The battery charger of claim 17, wherein the means for supplying comprises means for converting an AC input to a DC output, the DC output being output as the power supply voltage.

19. The battery charger of claim 18, wherein the means for supplying comprises means for adjusting the power supply voltage in response to the current detector output so that the substantially constant current is maintained near a constant value.

20. The battery charger of claim 15, wherein the power supply voltage is decreased in magnitude in response to the timer output.